Emergency Room Treatment of Asthma in Children

PERHAPS the most common type of respiratory emergency encountered in a hospital emergency room is acute asthma. Usually the physician encounters in such a situation a patient in whom the diagnosis has already been determined and then is faced with the task of quickly assessing the asthmatic's clinical status, both by history and physical examination. The initial evaluation should include in the history the duration of the attack, possible precipitating factors (especially infection), and the medications administered before the emergency room visit including dosage and time. It is of special importance to determine whether or not a pressurized adrenergic bronchodilator has been used before administering epinephrine. If gastrointestinal symptoms, particularly hematemesis, are present, aminophylline intoxication or steroid stress should be suspected. The physical examination should include an assessment of the use of accessory muscles of respiration, respiratory effort, presence of pulsus paradoxus, quality and symmetry of breath sounds, and any evidence of infection. An x-ray study of the chest and studies of blood gases can be a part of emergency room evaluation as well. The blood gas findings may indicate hypoxia of a degree not discernible by clinical examination alone.

A numerical "pulmonary index," as described by Bierman and Pierson, is useful to follow the patient's clinical course. A measurement of the expiratory flow rate, such as that obtained with a flow meter, can help a physician evaluate the status of an older child's airway and quickly may indicate severity of a degree which will require intensive therapy and admission to hospital. For example, a peak expiratory flow rate of 80 to 100 liters per minute or less (in an adult) with no improvement in the rate has been shown to correlate with deaths in asthma, as described by Williams.

Once this rapid but thorough assessment of the patient has been made there should be no delay in instituting the appropriate therapy—administration of epinephrine in uncomplicated acute asthma. In children, one to two doses at 20 minute intervals of aqueous epinephrine (1:1,000) 0.01 ml per kg of body weight per dose to a maximum of 0.5 ml may be administered subcutaneously. If there is a satisfactory response, epinephrine (Sus-phrine®) 1:200 then may be administered in a dose of 0.005 ml per kg up to 0.15 ml. Failure to respond to two or three subcutaneous doses of aqueous epinephrine indicates potential status asthmaticus and the need for further treatment in hospital.

In some emergency rooms, additional therapeutic measures including oxygen, hydration, intravenously given aminophylline, aerosolized bronchodilators and steroids are used before admission to hospital. Although controversial, intermittent positive pressure breathing may be used as a method of delivery of aerosolized bronchodilators in the management of acute asthma.

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REFERENCES

Davis WJ, Feldman BR: Management of status asthmaticus in children. Curr Concepts Allergy Clin Immunol 4:Spring 1975

Bierman CW, Pierson WE: The pharmacologic management of status asthmaticus in children. Pediatrics 54:245-247, Aug 1974

Weiss EB, Segal MS: Bronchial Asthma. Mechanisms and Therapeutics. Boston, Little, Brown and Co, 1976, chap 60, chap 62

Williams MH Jr: Pathophysiology and treatment of severe asthma. NY State J Med 73:2446-2451, Oct 15 1973

Intranasal Corticosteroid Sprays

THERE ARE TIMES when the usual measures for control of allergic rhinitis fail. These measures include antihistamine therapy, environmental control and immunotherapy. Formerly, topical application of available corticosteroid preparations was of little benefit; however, in recent years, the use of dexamethasone nasal spray (Decadron® phosphate Turbinaire®) has been introduced. This preparation will give relief to some patients and nasal polyps may be reduced. It may be of particular use in helping to wean a patient from the chronic use of nose drops and sprays. At times, it must be discontinued because of an irritating burning sensation.

Dexamethasone usually is initiated with two sprays into each nostril three or four times per day—the dose should be decreased gradually until the lowest number of sprays that gives reasonable control of symptoms is reached. There will be some absorption of this preparation in doses of 0.5 mg per day or more resulting in the usual side effects of systemic corticosteroids beyond 14 days of use. Nasal septal perforation has been reported in a few cases with long-term use.

A newer preparation, beclomethasone diproprionate (Beconase®), has been used with success